CLAIMS

What is claimed is:

1. An apparatus comprising:

a body having dimensions suitable for light transmission therethrough, the body comprising a core extending therethrough, a first portion of the core comprising a material having an index of refraction different than a second portion of the core and a cladding disposed about the core, wherein the material of the first portion of the core is thermally modifiable between an amorphous and a crystalline state.

2. The apparatus of claim 1, wherein the first portion of the core has a property such that the index of refraction changes by an order of at least a first decimal in response to a thermal modification.

3. The apparatus of claim 2, wherein the change of the index of refraction is reversible.

4. The apparatus of claim 2, wherein the first portion of the core comprises a chalcogenide.

5. The apparatus of claim 1, wherein the body is formed over a circuit substrate in thin film layers with the core layer disposed between cladding layers.

6. An apparatus comprising:

an optical electronic integrated circuit (OEIC) substrate comprising a plurality of waveguides, each waveguide comprising a core, a first portion of the core comprising a material having an index of refraction different than a second portion of the core, wherein the material of the first portion of the core is thermally modifiable between an amorphous and a crystalline state; and

a light source emitter coupled to at least one of the plurality of waveguides.

7. The apparatus of claim 6, wherein the first portion of the core has a property such that an index of refraction changes by an order of at least a first decimal in response to a thermal modification.

8. The apparatus of claim 7, wherein the change of index of refraction is reversible.

9. The apparatus of claim 7, wherein the first portion of the core comprises a chalcogenide.

10. The apparatus of claim 7, wherein the plurality of waveguides are arranged in a circuit of different paths, an optical path dictated by a modification of the index of refraction of the portion of the core at least one of the plurality of waveguides.

11. The apparatus of claim 10, further comprising a plurality of resistors respective ones disposed adjacent respective ones of the plurality of waveguides, wherein the state of a resistor modifies the index of refraction of the portion of the core of a waveguide.